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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,771	09/19/2005	Osamu Funahashi	MAT-8742US	7878
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			ART UNIT 2614	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/549,771

Applicant(s)

FUNAHASHI, OSAMU

Examiner

JESSE A. ELBIN

Art Unit

2614

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 9/10/2009
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed June 30, 2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funahashi (US PGPub 2003/0185415) (already of record) in view of Proni (US Patent 5,734,132 ('132)) (already of record).

Regarding claim 1, Funahashi teaches a loudspeaker (abstract) comprising: a magnetic circuit (#9) having an annular magnetic gap (#14); a frame (#19) coupled to the magnetic circuit (#9 and Fig. 1); a voice coil (#16) movably fitted into the magnetic gap ([0040] lines 1-2); and a diaphragm (#17) coupled to the frame (#19 and Fig. 1) at its periphery via a first edge (#18), wherein a suspension holder (#20) extending downward from a middle portion between an inner periphery and an outer periphery on a rear surface of the diaphragm (Figs. 7-9) is coupled to the diaphragm using an

adhesive (integrated with the diaphragm; Figs. 7 and [0053] lines 11-14); and the periphery of the suspension holder (#20) is coupled to the frame (#19) via a second edge (#21) that is symmetric and similar to the first edge (#18 and [0045] lines 3-5).

Funahashi does not explicitly teach an entire surface of an end face of the suspension holder is directly attached to the diaphragm.

In the same field of endeavor, Proni teaches an entire surface of an end face of a suspension holder (stabilizer; Fig. 3 #40) being directly attached to the diaphragm (*Fig. 3 illustrates the entire end face being directly attached to the diaphragm, as well as an overlapping section defined by the "cylindrical elbow 15", e.g. '132 col. 6 lines 19-22)* for the benefit of further damping the vibrations of the diaphragm.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the suspension holder/diaphragm connection taught by Funahashi by connecting "an entire surface of an end face of the suspension holder" to the diaphragm via the impregnated foam taught by Proni for the benefit of further damping the vibrations of the diaphragm.

Regarding claim 2, Funahashi and Proni remain as applied above.

Funahashi further teaches the diaphragm (#17) is formed of resin ([0043] lines 3-4).

Regarding claim 3, Funahashi and Proni remain as applied above.

Funahashi further teaches the first edge (Fig. 12 #29) and the second edge (Fig. 12 #30) are formed in a semicircular roll shape (Figs. 1, 4-17, and 20-21), respectively, and the first edge (Fig. 12 #29) is protruded toward a magnetic circuit (the roll of the first edge extends downward; Fig. 12 and [0060] line 7) and the second edge (Fig. 12 #30) is protruded toward the diaphragm (roll of the second edge extends upward; Fig. 12 and [0060] lines 7-9).

Regarding claim 4, Funahashi and Proni remain as applied above.

Funahashi further teaches the first edge (Fig. 11 #18) and the second edge (Fig. 11 #21) are formed in a semicircular roll shape (Figs. 1, 4-17, and 20-21), respectively, and the first edge (Fig. 11 #18) is protruded toward an opposite side of the magnetic circuit (the roll of the first edge extends upward; Fig. 11 and [0058] lines 7-8) and the second edge (Fig. 11 #21) is protruded toward the magnetic circuit (the roll of the second edge extends downward; Fig. 11 and [0058] lines 7-9).

Regarding claim 5, Funahashi and Proni remain as applied above.

Proni further teaches an engaging portion (e.g. Fig. 9a #12"), for positioning a coupling portion (Fig. 9a #78) in which the diaphragm (Fig. 9a #12') and the centering ring (stabilizer; #40), are integrated with each other (*at the junction of #78, 79*).

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funahashi et al. (US PGPub 2003/0185415 A1 ('415)) (already of record) in view of

Albinger (US Patent 4,029,911 ('911)) (already of record) in view of Proni (US Patent 5,734,132 ('132)) (already of record).

Regarding claim 6, Funahashi teaches a loudspeaker ('415 abstract) comprising: a magnetic circuit ('415 #9) having an annular magnetic gap ('415 #14); a frame ('415 #19) coupled to the magnetic circuit ('415 #9 and Fig. 1); a voice coil ('415 #16) movably fitted into the magnetic gap ('415 [0040] lines 1-2); and a diaphragm ('415 #17) coupled to the frame ('415 #19 and Fig. 1) at its periphery via a first edge ('415 #18), wherein a suspension holder ('415 #20) extending downward from a middle portion between an inner periphery and an outer periphery on a rear surface of the diaphragm ('415 Figs. 7-9) is coupled to the diaphragm using an adhesive (integrated with the diaphragm; Figs 7 and [0053] lines 11-14); and the periphery of the suspension holder ('415 #20) is coupled to the frame ('415 #19) via a second edge ('415 #21) that is symmetric and similar to the first edge ('415 #18 and [0045] lines 3-5)

Funahashi does not explicitly teach the method comprising the steps of: molding the diaphragm and the suspension holder, separately; and coupling the molded diaphragm and the molded suspension holder so as to be integrated with each other.

In the same field of endeavor, Albinger teaches the method comprising the steps of: molding the diaphragm ('911 #14) and the centering ring (suspension holder; '911 #15), separately ('911 Fig. 2 illustrates separate components); and connecting (coupling) the molded diaphragm ('911 #14) and the molded centering ring (suspension

holder; '911 #15) so as to be integrated with each other ('911 col. 6 lines 45-49) for the benefit of reducing cost and complexity of molding equipment.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the steps of molding a diaphragm and suspension holder out of resin as taught by Funahashi by molding the parts separately and joining them at assembly as taught by Albinger for the benefit of reducing cost and complexity of molding equipment.

Neither Funahashi nor Albinger explicitly teaches attaching an entire surface of an end face of the suspension holder directly to the diaphragm.

In the same field of endeavor, Proni teaches attaching an entire surface of an end face of a suspension holder (stabilizer; Fig. 3 #40) directly to the diaphragm (*Fig. 3 illustrates the entire end face being directly attached to the diaphragm, as well as an overlapping section defined by the "cylindrical elbow 15", e.g. '132 col. 6 lines 19-22*) for the benefit of attaching the holder to the diaphragm over a minimal surface area, thereby minimizing the changes to the diaphragm stiffness.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the suspension holder/diaphragm connection method taught by the combination of Funahashi and Albinger by connecting "an entire surface of an end face of the suspension holder" to the diaphragm as taught by Proni for the benefit of attaching the holder to the diaphragm over a minimal surface area, thereby minimizing the changes to the diaphragm stiffness.

Regarding claim 7, Funahashi, Albinger, and Proni remain as applied above.

Albinger further teaches using ultrasonic welding to join the diaphragm edge to a plastic part of the frame (the resin-molded diaphragm and the resin-molded suspension holder are integrated with each other by welding; '911 col. 1 lines 42-45) for the benefit of producing a uniform, reliable, and rapid attachment ('911 col. 1 lines 45-46).

While Albinger does not explicitly teach connecting the centering ring with the diaphragm by welding, Albinger teaching use of ultrasonic welding to produce a uniform, reliable, and rapid attachment between plastic parts would have made it obvious to one of ordinary skill in the art at the time of the invention to use as the method of connecting the diaphragm and suspension holder as taught by the combination of Funahashi and Albinger.

Regarding claim 8, Funahashi, Albinger, and Proni remain as applied above.

Funahashi further teaches the suspension holder and the diaphragm being formed of a resin ('415 [0044] lines 9-10 and [0043] lines 3-4, respectively).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Funahashi et al. (US PGPub 2003/0185415 A1 ('415)) (already of record) in view of Albinger (US Patent 4,029,911 ('911)) (already of record) in view of Proni (US Patent 5,734,132 ('132)) (already of record) in view of Sato et al. (US Patent 5,793,002 ('002)).

Regarding claim 9, Funahashi, Albinger, and Proni remain as applied above.

The combination does not explicitly teach the resin being a polypropylene resin.

In the same field of endeavor, Sato teaches use of "an amount of polypropylene resin...into a metallic mold" ('002 col. 3 lines 36-37) for the benefit of creating a loudspeaker component with a specific stiffness and thickness.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the resin taught by the combination of Funahashi, Albinger, and Proni with the polypropylene resin taught by Sato for the benefit of creating a loudspeaker component with a specific stiffness and thickness.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of US Patent 7,443,996 in view of the prior art of record as outlined in the art rejections above. While the two sets of claims are not identical, their differences were not found to patentably distinguish the two sets of claims in view of the prior art of record.

8. **Claims 1-9** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/583044 in view of the prior art of record.

This is a provisional obviousness-type double patenting rejection.

Instant Application	Application 10/583,044 (PGPub 2007/0177757)
<p>Claim 1</p> <p>A loudspeaker comprising:</p> <p>a magnetic circuit having an annular magnetic gap;</p> <p>a frame coupled to the magnetic circuit;</p> <p>a voice coil movably fitted into the magnetic gap;</p> <p>and a diaphragm coupled to the frame at its periphery via a first edge,</p> <p>wherein a suspension holder extending downward from a middle portion between an inner periphery and an outer periphery on a rear surface of the diaphragm is integrated with the diaphragm, an entire surface of an end face of the suspension</p>	<p>Claim 1</p> <p>A loudspeaker comprising</p> <p>a magnetic circuit held by the frame,</p> <p>a voice coil body disposed so as it can move freely in a magnetic gap of the magnetic circuit,</p> <p>a diaphragm whose outer circumferential end is connected to the frame via a first edge,</p>

Instant Application	Application 10/583,044 (PGPub 2007/0177757)
holder is directly attached to the diaphragm; and the periphery of the suspension holder is coupled to the frame via a second edge that is symmetric and similar to the first edge.	a suspension holder whose outer circumferential end is connected to the frame via a second edge;

See the art rejections above, regarding the obviousness of the differences in the two sets of claims.

9. **Claims 1-9** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 9 of copending Application No. 10/585,942 in view of the prior art of record.

This is a provisional obviousness-type double patenting rejection.

Instant Application	Application 10/585,942 (PGPub 2007/0121995)
Claim 1 A loudspeaker comprising: a magnetic circuit having an annular magnetic gap;	Claim 1 A speaker, comprising: a magnetic circuit having a magnetic gap

Instant Application	Application 10/585,942 (PGPub 2007/0121995)
<p>a frame coupled to the magnetic circuit;</p> <p>a voice coil movably fitted into the magnetic gap;</p> <p>and a diaphragm coupled to the frame at its periphery via a first edge,</p> <p>wherein a suspension holder</p> <p>extending downward from a middle portion between an inner periphery and an outer periphery</p> <p>on a rear surface of the diaphragm is integrated with the diaphragm, an entire surface of an end face of the suspension holder is directly attached to the diaphragm;</p> <p>and the periphery of the suspension holder is coupled to the frame via a second edge that is symmetric and similar to the first edge.</p>	<p>and disposed inside of the frame;</p> <p>a voice coil body disposed movably in the magnetic gap;</p> <p>and a diaphragm whose outer periphery edge is coupled to the frame,</p> <p>Claim 9, dependent upon claim 1</p> <p>a suspension-holder whose an end is coupled to the frame and other end is coupled to a back surface of the diaphragm.</p>

See the art rejections above, regarding the obviousness of the differences in the two sets of claims.

10. **Claims 1-9** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of copending Application No. 10/568,278 in view of the prior art of record.

This is a provisional obviousness-type double patenting rejection.

Instant Application	Application 10/568,278 (PGPub 2006/0285718)
Claim 1 A loudspeaker comprising: a magnetic circuit having an annular magnetic gap; a voice coil movably fitted into the magnetic gap; a frame coupled to the magnetic circuit;	Claim 1 A speaker including: a magnetic circuit wherein at least a part of the voice coil is movably disposed in a magnetic gap of the magnetic circuit; Claim 2, dependent upon claim 1 the magnetic circuit includes: a ring-shaped plate outer periphery thereof being laminated on the magnet and inner periphery thereof

Instant Application	Application 10/568,278 (PGPub 2006/0285718)
<p>and a diaphragm coupled to the frame at its periphery via a first edge,</p> <p>wherein a suspension holder extending downward from a middle portion between an inner periphery and an outer periphery on a rear surface of the diaphragm is integrated with the diaphragm, an entire surface of an end face of the suspension holder is directly attached to the diaphragm;</p> <p>and the periphery of the suspension holder is coupled to the frame via a</p>	<p>being pushed into the frame together with the columnar protrusion of the yoke.</p> <p>Claim 1</p> <p>a diaphragm with outer periphery of the diaphragm being fixed to an edge of the opening of the frame through a first edge;</p> <p>and a suspension holder outer periphery thereof being fixed to the</p>

Instant Application	Application 10/568,278 (PGPub 2006/0285718)
second edge that is symmetric and similar to the first edge.	frame through a second edge on the bottom surface of the diaphragm inside the frame; wherein the first and the second edges are substantially symmetrical with respect to a space between the first and the second edges,

See the art rejections above, regarding the obviousness of the differences in the two sets of claims.

11. **Claims 1-9** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/549,424 in view of the prior art of record.

This is a provisional obviousness-type double patenting rejection.

Instant Application	Application 10/549,424 (PGPub 2006/0245615)
<p>Claim 1</p> <p>A loudspeaker comprising:</p> <p>a voice coil movably fitted into the magnetic gap;</p> <p>a magnetic circuit having an annular magnetic gap;</p> <p>a frame coupled to the magnetic circuit;</p> <p>and a diaphragm coupled to the frame at its periphery via a first edge,</p> <p>wherein a suspension holder</p> <p>extending downward from a middle portion between an inner</p>	<p>Claim 1</p> <p>A loudspeaker comprising:</p> <p>a voice coil unit disposed slidably with respect to</p> <p>a magnetic gap provided in the magnetic circuit;</p> <p>a magnetic circuit disposed inside the frame;</p> <p>a diaphragm coupled to the frame at its outer circumferential end part via a first edge;</p> <p>and a suspension holder coupled to a rear surface of the diaphragm and</p>

Instant Application	Application 10/549,424 (PGPub 2006/0245615)
<p>periphery and an outer periphery on a rear surface of the diaphragm is integrated with the diaphragm, an entire surface of an end face of the suspension holder is directly attached to the diaphragm;</p> <p>and the periphery of the suspension holder is coupled to the frame via a second edge that is symmetric and similar to the first edge.</p>	<p>coupled to the frame at its one end via a second edge;</p>
<p>Claim 3, dependent upon claim 1</p> <p>the first edge and the second edge are formed in a semicircular roll shape, respectively, and the roll of the first edge extends downward and the roll of the second edge extends upward.</p>	<p>Claim 2, dependent upon claim 1</p> <p>the first edge is allowed to bend downward and the second edge is allowed to bend upward.</p>
<p>Claim 4, dependent upon claim 1</p> <p>the first edge and the second edge are formed in a semicircular roll</p>	<p>Claim 3 dependent upon claim 1</p> <p>the first edge is allowed to bend upward and the second edge is</p>

Instant Application	Application 10/549,424 (PGPub 2006/0245615)
shape, respectively, and the roll of the first edge extends upward and the roll of the second edge extends downward.	allowed to bend downward.

See the art rejections above, regarding the obviousness of the differences in the two sets of claims.

Response to Arguments

12. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSE A. ELBIN whose telephone number is (571)270-3710. The examiner can normally be reached on Monday through Friday, 9:00am to 6:00pm EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. A. E./
Examiner, Art Unit 2614
/CURTIS KUNTZ/
Supervisory Patent Examiner, Art Unit 2614